Case 2842
Bilateral ovarian vein thrombosis

Oliveira C, Bexiga A, Penedo JP, Ferreira J, Cunha TM
INSTITUTO PORTUGUÊS DE ONCOLOGIA de Francisco Gentil de LISBOA

Section: Vascular Imaging
Published: 2004, Mar. 3
Patient: 62 year(s), female

Clinical Summary

The patient complained of metrorrhagia for three months. Gynaecologic observation revealed a large friable tumor replacing the uterine cervix.

Clinical History and Imaging Procedures

The patient complained of metrorrhagia for three months. Gynaecologic observation revealed a large friable tumor replacing the uterine cervix.
CT showed a mass lesion of the cervix without rectal or bladder invasion. Bilateral external iliac adenopathy was also documented. As an incidental finding, thrombosis of the left and right ovarian veins and right internal iliac vein was found.
MRI and Doppler US were performed and confirmed the diagnosis. MRI also demonstrated parametrial invasion. Histology revealed squamous cell carcinoma of the uterine cervix. Patient is currently undergoing radiotherapy.

Discussion

Before the appearance of modern imaging, diagnosis of ovarian vein thrombosis (OVT) was made solely on clinical grounds or at exploratory surgery. OVT is associated with several conditions that fulfil one or more criteria of Virchow`s triad (venous stasis, hypercoagulability, vascular damage) like post-partum endometritis, pelvic inflammatory disease, gynaecologic surgery, coagulopathy and oncologic diseases with or without concurrent chemotherapy. OVT is a rare (1 in 2000 cases) but severe post-partum complication, usually presenting during the first week after delivery with spiking fever, tachycardia, lower

abdominal/flank pain and a deep tender abdominal mass. In this situation, as well as in the cases of OVT that are associated with gynaecologic surgery or pelvic inflammatory disease, the right ovarian vein is most commonly affected. The left ovarian vein is spared presumably due to the existence of retrograde venous flow, which prevents bacteria from "travelling" up the vessel. OVT may coexist with sepsis, septic pulmonary thromboembolism and thrombosis of the inferior vena cava and renal veins being, in such cases, potentially fatal. In these settings, immediate treatment with anticoagulants and antibiotics or (if all else fails) surgery, is required.

It is thought that some neoplastic tissues produce pro-coagulant substances, such as thrombin, that promote thrombus formation but can also stimulate tumor growth and metastatic spread, consequently worsening prognosis. Contrary to OVT associated with the above-mentioned causes, OVT that occurs with malignancy most commonly affects the left ovarian vein. Oncologic patients under chemotherapy are at a higher risk of developing OVT than those who are not. The need for treatment in such situations is not very clear since most of the cases are asymptomatic and resolve without complications.

Imaging diagnosis of OVT is possible using ultrasound (US), computed tomography (CT), magnetic resonance (MR) or a combination of these techniques. On US the thrombosed vein can appear as a dilated, non-compressible, tubular structure with intra-luminal reflective clot and partial or total absence of blood flow on Doppler study that may extend from the ovaries to the renal vein on the left or to the inferior vena cava on the right. CT and MR are more sensitive and specific in the evaluation of OVT. CT findings include visualization of a "sausage-shaped" tubular structure that extends along the retroperitoneal space. This tubular structure represents the enlarged ovarian vein, intra-luminal thrombus being represented as a filling defect on contrast enhanced studies.

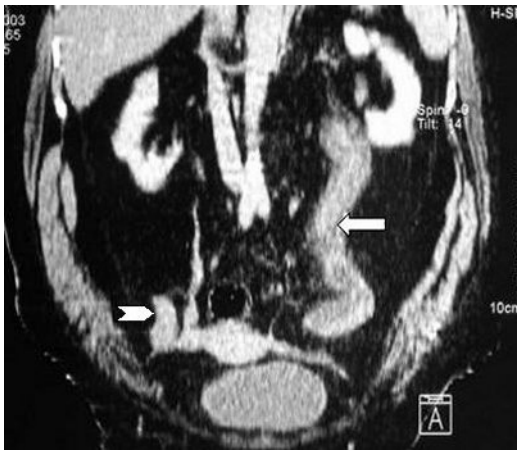
On MR, thrombus can give variable signal intensity depending on its age. The relatively fresh thrombus causes moderately bright signal intensity whereas the old thrombus tends to produce low signal intensity on T2-weighted sequences. On CT and MR, perivascular oedema can also be documented.

Final Diagnosis

Bilateral ovarian vein thrombosis

Figures

Figure 1

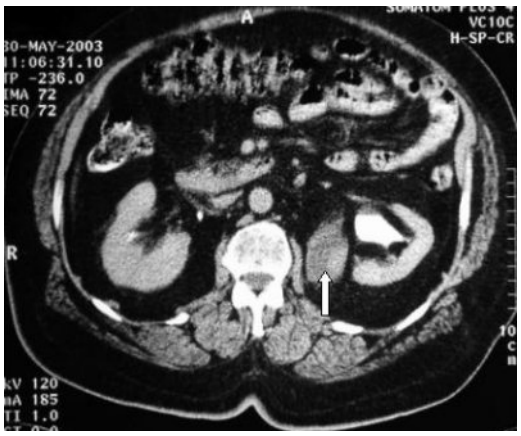


Shows thrombosed left (white arrow) and right (arrow-head) ovarian veins.

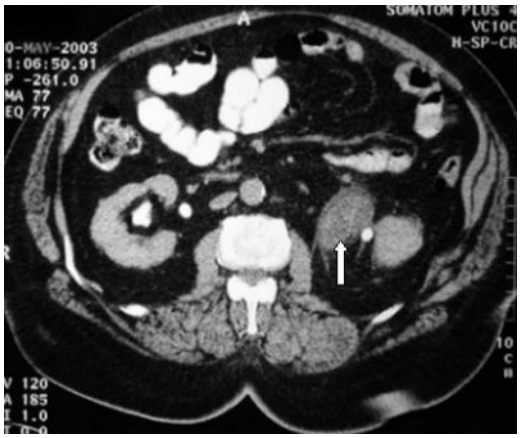
Shows thrombosed left ovarian vein (white arrow).

Figure 2

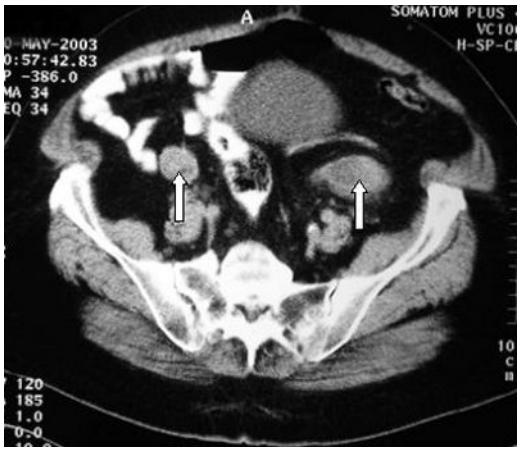
Scan obtained at the renal hilum level shows thrombosed left ovarian vein (white arrow).



Scan obtained below the renal hilum demonstrates thrombosed left ovarian vein (white arrow).

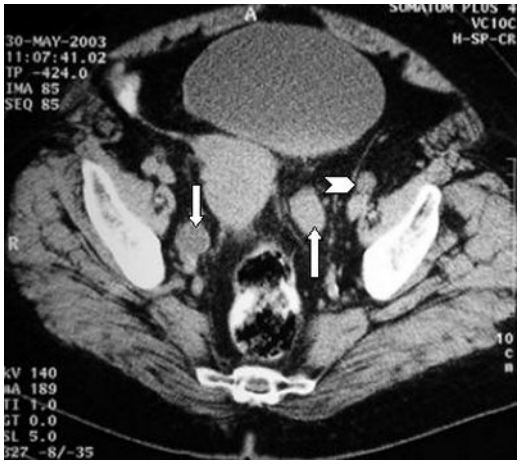


Scan obtained at the level of the inferior pole of the left kidney demonstrates thrombosed left ovarian vein (white arrow).

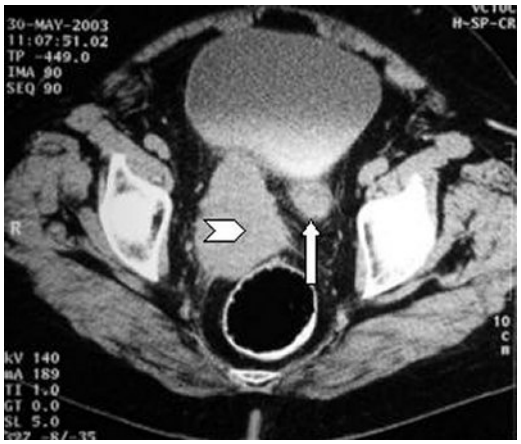


Scan obtained at the level of the bladder dome depicts both thrombosed ovarian veins (white arrows).

Scan showing uterine corpus, bladder, right ovary (arrowhead) and thrombosed left ovarian vein (white arrow).

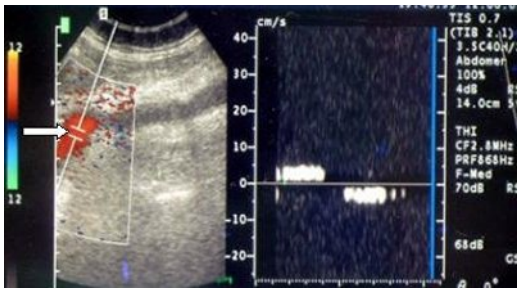


In this scan, right internal iliac and left ovarian vein thrombosis is evident (white arrows). Left external iliac adenopathy is also shown (arrowhead).



Scan through the uterine cervix, which is replaced by a large tumoral lesion (arrowhead). Thrombosed left ovarian vein (white arrow).

Figure 3

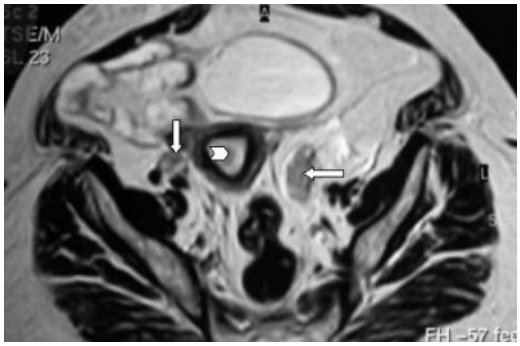


Dilated, non-compressible left ovarian vein, which only presents blood flow on its most proximal segment (white arrow).

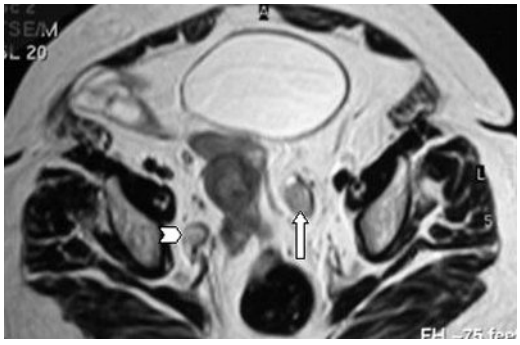
Figure 4

In the sagittal plane, a large tumor replacing the whole uterine cervix (white arrow)is shown. There is infiltration of the uterine corpus without rectal or bladder invasion.

Parasagittal left plane through left ovarian vein, which is dilated and contains thrombus (arrowhead) with slow peripheric blood flow (white arrow).



Axial plane through uterine corpus shows intra-cavitary blood clot (arrowhead). Thrombosed left ovarian vein (horizontal white arrow) and right external iliac adenopathy (vertical white arrow).



Axial plane through uterine lower corpus/isthmus with tumor clearly visible. Thrombosed left ovarian vein (white arrow). Thrombosed right internal iliac vein (arrowhead).

Axial plane through uterine cervical tumor (arrowhead), which shows parametria invasion without rectal or bladder compromise. Thrombosed left ovarian vein (white arrow).

MeSH

Veins [A07.231.908]
The vessels carrying blood toward the heart.

Venous Thrombosis [C14.907.355.830.925]
The formation or presence of a thrombus within a vein.

References

[1] Jacoby WT, Cohan RH, Baker ME, Leder RA, Nadel SN, Dunnick NR.
Ovarian vein thrombosis in oncology patients: CT detection and clinical significance.
AJR Am J Roentgenol. 1990 Aug;155(2):291-4.

[2] Morgan MA, Iyengar TD, Napiorkowski BE, Rubin SC, Mikuta JJ.
The clinical course of deep vein thrombosis in patients with gynecologic cancer.
Gynecol Oncol. 2002 Jan;84(1):67-71.

[3] Quane LK, Kidney DD, Cohen AJ.
Unusual causes of ovarian vein thrombosis as revealed by CT and sonography.
AJR Am J Roentgenol. 1998 Aug;171(2):487-90.

[4] Yassa NA, Ryst E.
Ovarian vein thrombosis: a common incidental finding in patients who have undergone total abdominal hysterectomy and bilateral salpingo-oophorectomy with retroperitoneal lymph node dissection.
AJR Am J Roentgenol. 1999 Jan;172(1):45-7.

[5] Twickler DM, Setiawan AT, Evans RS, Erdman WA, Stettler RW, Brown CE, Cunningham FG.
Imaging of puerperal septic thrombophlebitis: prospective comparison of MR imaging, CT, and sonography.
AJR Am J Roentgenol. 1997 Oct;169(4):1039-43.

Citation

Oliveira C, Bexiga A, Penedo JP, Ferreira J, Cunha TM (2004, Mar. 3)

Bilateral ovarian vein thrombosis {Online}

URL: http://www.eurorad.org/case.php?id=2842